

BIOLOGICAL INTEGRITY

What does the indicator tell us?

This indicator shows data from (1) 31 states that currently have comprehensive biological monitoring programs in streams and wadeable rivers and (2) EPA's Environmental Monitoring and Assessment Program (EMAP), which uses biological monitoring to evaluate estuaries. Of those rivers and estuaries actually assessed for biological integrity, 50 percent of rivers and 74 percent of estuaries have healthy aquatic communities.

Pronounced changes in these biological communities indicate a disruption of healthy environmental conditions and can be useful in identifying cumulative effects of pollutants, habitat alteration that is difficult to see, effects from bioaccumulative chemicals, and other impacts that chemical monitoring does not reveal.

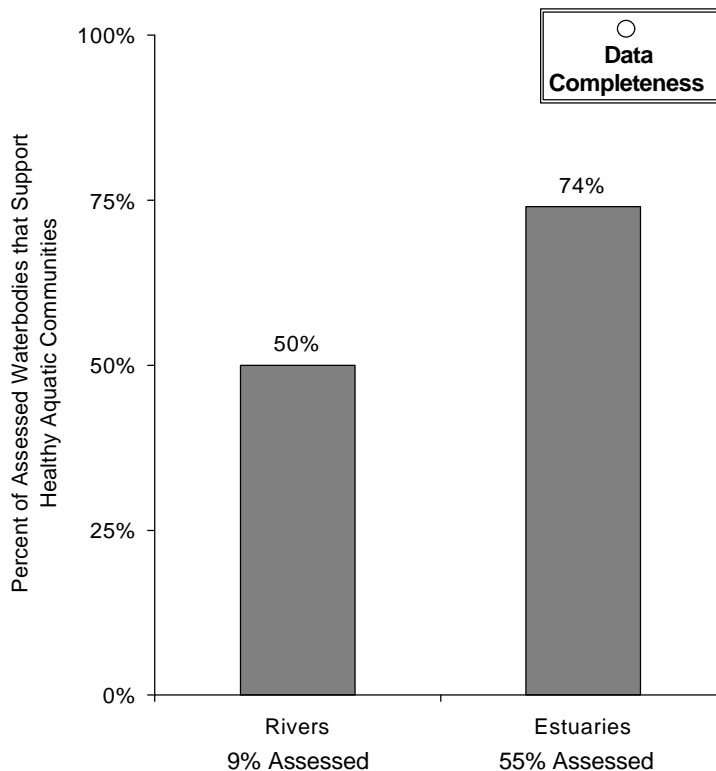
How will the indicator be used to track progress?

The data for rivers and streams are based on state monitoring programs that compare the aquatic organisms monitored at many locations to the expected composition, abundance, and condition of aquatic organisms typical of a minimally impaired reference condition. Information for estuaries is collected by EMAP, which uses a sample survey design to assess a wide area of waters.

What is being done to improve the indicator?

Assessing a water for healthy biological communities is a complex task, and the science to do so is newer and used less frequently than that used for chemical monitoring. EPA and its partners are working together to strengthen biological monitoring programs, assess

INDICATOR 7: Biological Integrity



Source: EPA EMAP, 1994, and state biological monitoring data, 1992-1994

Proposed Milestone: By 2005, 80 percent of the Nation's surface waters will support healthy aquatic communities.

more waters, and gather better data for producing the indicator. Methods for biological monitoring in lakes are not yet standardized, so there are not enough data to confidently report the number of lakes supporting healthy aquatic life.

This indicator could be improved by increasing the number of estuaries and rivers assessed and by beginning to perform lake biological assessments. Greater consistency in monitoring techniques must be ensured through the use of comparable methods and assessments. This could be accomplished through work done by the Intergovernmental Task Force on Monitoring Water Quality (ITFM). ITFM will also work to ensure consistency among federal and state data needed for representative reference conditions throughout a region.

EPA is working with states to develop methods and guidance to quantitatively measure the biological integrity of specific surface water types. Protocols for wadeable rivers and streams are available, and those for lakes are in draft form. Protocols for monitoring estuaries, wetlands, and large rivers are still needed.

To improve the amount and cross section of data used to characterize biological integrity, EPA is actively supporting states and tribes in the comprehensive biological assessment of their waters. EPA is also working with other federal agencies such as the Tennessee Valley Authority and the U.S. Geological Survey's National Water Quality Assessment program to determine how those data can be used to support this indicator.

What is being done to improve conditions measured by the indicator?

EPA and other federal and state agencies recognize that while most point sources are controlled with specific permit limits, less visible stormwater runoff and nonpoint sources of pollution also should be controlled. EPA and its partners are now placing greater emphasis on reducing the effects of habitat perturbation from

grazing, farming, stream channelization, stormwater runoff, introduction of nonnative species, dam operations, and dredging. These activities affect aquatic ecosystems by reducing waterside vegetation, which provides both shade and bank stabilization; by increasing siltation; by scouring and removing important habitat components; and by raising water temperatures.

For More Information:

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